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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/542,915	02/07/2006	Stefan Koch	10191/4171	9548
26646 7590 04/02/2007 KENYON & KENYON LLP ONE BROADWAY NEW YORK, NY 10004			EXAMINER LEYKIN, RITA	
			ART UNIT	PAPER NUMBER
			2837	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/02/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/542,915

Applicant(s)

KOCH ET AL.

Examiner

Rita Leykin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 7-12 is/are rejected.
- 7) ☒ Claim(s) 13 and 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 02/27/07.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Remarks

This office action is in response to remarks filed on 12/29/06. Applicant's arguments have been considered but found not persuasive. All the elements and their electrical connections in applicant's Fig. 1 that represents invented control circuit are found in Sato et al. US # 5,811,948, Fig. 1 as a known prior art. Wherein, the gate of the switching element 54 is subjected to a pulse width modulation signal having an adjustable duty cycle (an adjustable duty factor), see col. 3, lines 9-11. A capacitor C52 and choke coil L51 are connected to the positive terminal of dc power supply 52. Wherein the choke coil L51 and capacitor C52 compose an LC (Low Pass Filter), which serves to absorb switching noise caused by switching operation of the switching element 54. The LC prevents the switching noise from leaking toward a side of the dc power supply 52. Sato et al. teach that switching element 54 is a subject to a pulse width modulation signal with a controllable duty cycle. With reference to Fig. 7 Sato et al. teach control unit 14 generating PWM signal having duty cycle of a duty factor depending on the command signal. The control unit 14 outputs the PWM signal to the gate of the switch 12. In view of the life of a brush in the motor 10, the level of sound caused by magnetism in the motor 10, and the effect of switching noise on other devices, it is preferable to set the frequency of the PWM signal (that is switching frequency related to the switching element 12) in the range of several kilohertz. In Sato et al. the gate of switching MOSFET is subjected to a pulse width modulation with controllable duty cycle (duty factor).

Based on the above examiner maintains the previous rejection as follows.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 7, 10 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Sato et al. US # 5,811,948.

With respect to claims 7 and 10 Sato et al. disclose a control apparatus for electric motor, wherein Fig. 7 depicts:

- A power supply voltage to a motor 10 via battery 2
- The electric motor 10 that is controlled by PWM signal via a transistor switching element 12 based on PWM signal output of control unit 14.
Wherein the duty factor of the generated PWM signal depends on the command signal;
- An LC filter provided in the power feed line for blocking propagation of switching noise from the switching element toward the dc power supply, (see col. 2, lines 2-6). The low pass filter presented in Fig. 7 in form of coil L1 and group of capacitors C0, C1, C2;
- The voltage frequencies are affected by overshoot of the flywheel diode D1. The overshoot causes voltage ripples in the power feed line between

the dc power supply and the motor. The suppression of ripples or in other words modification of the ripple frequency is provided via filter and pulse width modification of on-to-off or off-to-on state of switching element 12, (see col. 6, lines 25—67, col. 7, lines 1-40).

- PWM signal having an adjustable duty cycle, wherein changing the PWM signal frequency is an inherent function of pulse duty cycle.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 8, 9, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. US # 5,811,948 and Warmbier et al. US # 4,236,102.

The limitations of base claims 1 and 10 have been discussed in the rejection above. Sato et al. do not teach not to exceed maximum permissible power dissipation. However in Warmbier et al. since the transistor T1 of the switch amplifier is either completely open or completely closed, no power losses are produced there. Similarly the conversion of the amplified PWM output signal of the transistor T1 into a corresponding direct voltage signal at the output of the low-pass filter is loss-free insofar as the components of the low-pass filter Dr, C1 are loss-free.

Hence, it has been obvious to one of ordinary skills in the art, at the time invention was made to combine Warmbier et al. observation regarding magnitude of losses generated due to the state of transistor switch with Sato et al. teaching on PWM control of motor supply to control transistor switch in such a manner to maintain completely open or completely closed state of the switch.

The reason is the reduction of rate of heat that is generated in switching element.

Allowable Subject Matter

5. Claims 13 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rita Leykin whose telephone number is (571)272-2066. The examiner can normally be reached on Monday-Friday 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula Bradley can be reached on (571)272-2800 . The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Rita Leykin
Primary Examiner
Art Unit 2837



R.L.